What is the difference between Salivary Amylase and Pancreatic Amylase

Amylase has the same structure in the human body, produced in the saliva or the pancreas. The two forms of amylase seen in humans are simple molecules made up of a single chain of amino acids. Both of these amylases are secreted by the pancreas at distinct periods and in separate organs.

The salivary amylase enzyme breaks down the unprocessed form of carbohydrates known as starch, while complex carbs, which take longer to digest, are the primary targets of pancreatic amylases. This is the primary **difference between** the two amylases.

The digestive process begins with the production of an enzyme called salivary amylase. To begin breaking down carbohydrates, the salivary glands secrete an amylase. The last phase in the digestion of carbohydrates is catalyzed by amylase, which occurs in the stomach after being secreted by the pancreas. At the completion of digestion, the pancreatic gland secretes pancreatic amylase to finish breaking down carbs.

Differences between Salivary and Pancreatic Amylase:

Consumption of Food by Mouth and Stomach Despite sharing 94% sequence identity with pancreatic amylase, human salivary amylase is inactivated by the low pH of the stomach. Breastfed infants have an easier time digesting supplemental starches than bottle-fed infants, and this is because human milk contains amylase. The significant differences between these two amylases are here:

Site of action:

The mouth, or oral cavity, is where salivary amylase works, whereas the first part of the small intestine is where pancreatic amylase works. The nature of the food particle changes as the location of action for both of these enzymes shifts. The food particle is rougher and more challenging in the beginning, but it becomes smoother and softer the farther it travels through the digestive system. So, salivary amylase works on the bolus when food is churned with saliva. Chyme, a semifluid mass of food generated in the stomach and intestines, provides the substrate for the pancreatic amylase that helps break down carbohydrates.

Optimal pH:

Both enzymes can only perform their tasks precisely and accurately at the optimum pH value. Regarding optimum activity, salivary amylase prefers a pH range of 6.8 to 7.2, whereas pancreatic amylase thrives in a more alkaline environment.

Cleave complex carbohydrates:

Both of these enzymes belong to the family of hydrolytic enzymes, and their primary job is to convert complex carbs into simple sugar molecules. The -1,4 glycosidic link is broken by salivary amylase, whereas the -1,6 glycosidic bond is broken by pancreatic amylase.